



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,026	02/18/2004	Paul F. Illegems	5707-05600	2821

7590 07/12/2006

Jeffrey C. Hood  
Meyertons, Hood, Kivlin, Kowert & Goetzel PC  
P.O. Box 398  
Austin, TX 78767

EXAMINER

VERBITSKY, GAIL KAPLAN

ART UNIT PAPER NUMBER

2859

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

RD

<b>Office Action Summary</b>	<b>Application No.</b> 10/781,026	<b>Applicant(s)</b> ILLEGEMS ET AL.	
	<b>Examiner</b> Gail Verbitsky	<b>Art Unit</b> 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 7, 9-13, 15-16, 18-20, 22-27, 29-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7, 9-13, 15-16, 18-20, 22-27, 29-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 7, 9-13, 18-20, 29-30 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over by Grannes et al. (U.S. 20040001527) [hereinafter Grannes] in view of Cabib et al. (U.S. 5823681) [hereinafter Cabib].

Grannes discloses in Fig. 1 a temperature measuring device comprising a plurality pn-junctions (temperature sensing diodes) grouped into  $n(n-1)/2$  pairs (three pairs/ six junctions) comprising a first pn-junction coupled antiparallel to a second pn-junction. The device also has  $n$  (three) access points (pins), wherein  $n$  is an integer greater than 1. The junctions are distributed on an IC to measure temperature of the IC (paragraph [0028]). Grannes also teaches to calibrate the junctions by sensing a first current and a second current through the junction to generate an output voltage across the junction to determine the current dependent voltage difference. Each pn-junction is coupled to a common return pin 123.

For claims 3, 9, 11, 12, 19: The pn-junctions can be accessed individually (abstract) and thus, independently.

For claim 13: The circuit is configured as a temperature measuring circuit.

Grannes does not explicitly states that the (temperature sensing) junctions can be accessed simultaneously.

Cabib discloses a plurality temperature sensors measuring temperature at different locations of a wafer simultaneously or independently.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Grannes, so as to allow the operator to access temperature at different locations/ from different temperature sensors simultaneously, as taught by Cabib, in order to obtain the temperature data of the entire wafer/ IC, so as to allow the operator/ processor to instantly compare one area of the IC with another, and see where the overheating occurred, so as to take necessary actions.

3. Claims 5, 15-16, 22-27 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Grannes and Cabib as applied to claims 1-3, 7-13, 18-20 above, and further in view of Sheehan et al. (U.S. 6736540) [hereinafter Sheehan].

Grannes and Cabib disclose the device as stated above.

They do not explicitly teach that the pn-junction can be a bipolar transistor. They do not teach  $V_{be}$ .

Sheehan discloses in Fig. 1 a temperature sensing pn-junction (diode) D1 for an integrated circuit IC. The temperature of a part of the IC where the junction located is determined by providing a first current to the junction and determining first  $V_{be}$ , providing second current to the junction and determining second  $V_{be}$ , then determining

delta  $V_{be}$  representative the temperature of interest. Sheehan states that the junction can also be a diode connected bipolar transistor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Grannes and Cabib, so as to determine delta  $V_{be}$  representative temperature, as taught by Sheehan, in order to accurately measure temperature of the IC, as already suggested by Sheehan and prevent the IC from overheating.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the pn-junction (diode) disclosed by Grannes and Cabib, with the pn-junction (diode connected bipolar transistor), as taught by Sheehan, because both of them are alternate types of temperature measuring pn-junctions, which will perform the same function, of measuring the temperature of the part of the IC where they are located, if one is replaced with the other.

### ***Response to Arguments***

4. Applicant's arguments filed have been fully considered but they are not persuasive.

The invention of Grannes is shown in Fig. 1, the Applicant's invention is shown in Fig. 1 (embodiment 120). According to Applicant, n-1 PN junctions of the instant invention are simultaneously accessible via n access points. The fact, that the embodiment shown by Grannes and the embodiment shown by Applicant in Figs. 1 respectively are identical, would suggest that the respective devices would demonstrate the same/ similar behavior, also, since the invention have the same number of access

points (3 as shown in Figs. 1 respectively) would suggest that the same number of access points could be accessible (connected to another device). And, although, the Examiner did not use 102 rejection for rejection of claim 1, the Examiner believes that this would also suggest that said PN junctions can be connected to another device (thus, be accessible) at the same time (simultaneously).

With respect to Cabib: In response to applicant's argument that there is no suggestion to combine references, the examiner recognizes that there should be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re Nomiya, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. the test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971). The references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. In re Bozek, 163 USPQ 545 (CCPA) 1969. In this case, the Examiner only using Cabib as a secondary reference for its teaching that a plurality of temperature sensors can be assessed simultaneously, therefore, the combination of Grannes and Cabib teaches that a plurality of temperature sensing junctions can be assessed simultaneously.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2859

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GKV

Gail Verbitsky  
Primary Patent Examiner, TC 2800



June 28, 2006